

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Means for Covering a Vapour-permeable Roof or the Like

We, ERNEST CRABB and LESLIE CRABB, both of "Tregelly" Antony Torpoint, Cornwall both of British nationality, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to panels or boards including layers of expanded polystyrene suitable for covering a vapour-permeable roof with such panels or boards.

It is known to prevent the blowing-up, swelling, bulging or loosening of a roof comprising roofing board and an insulating layer, by providing under the insulation a system of channels through which water vapour or other vapours or gases which diffuse upwards through roofing boards may escape. Such a construction of roof is, however, relatively expensive as the various layers have to be applied in separate operations.

It is an object of the invention to provide an insulating sheet, panel or board which may be produced at low cost and which is particularly adapted for use in the construction of insulated roofs having outlets or vents for the escape of gases.

In one construction according to the invention, the panel or board comprises a layer of particles, such as coarse sand, small grit or particles of a thermoset or other resin, secured by means of an adhesive to one of the main faces of the layer of expanded polystyrene. The panel or board may then be secured by an adhesive to a roof or the like through its layer of particles. Thus the layer of particles forms, in effect a gas-permeable bond between the panel or board and the member to which the panel or board is secured.

In a further construction, the panel or board comprises a layer of expanded polystyrene on one face of which a thinner layer of cement or concrete is provided, the outer

face of the cement or concrete layer being provided with a series of parallel channels which extend from one edge to the opposite edge. In this construction, it is preferred to provide a further main channel around the whole periphery of the cement or concrete layer and into which main channel the series of parallel channels extend. The peripheral channels of the panels or boards which are laid side by side will form head channels which are in communication with one another and with the series of parallel channels in each panel or board.

The insulating panels or boards may be secured to a roof or other surface by any suitable organic or inorganic binder or adhesive.

The invention is diagrammatically illustrated by way of example in the drawings accompanying the Provisional Specification in which,

Figures 1 and 2 show two different constructions of insulating panel or board in section and

Figure 3 shows, in plan, the undersurface of a number of panels or board in adjacent positions;

The insulating panel or board illustrated in Figure 1 comprises a layer *a* of expanded polystyrene, to one face of which particles *c* of coarse sand, fine grit or the like are secured by an adhesive layer *b*. The undersurface *d* of the layer *a* is thus separated from the upper surface of the concrete roof *g* by the particles *c*. By means of an adhesive layer *e*, the layer of particles and thereby the panel or board itself, is secured to the roof, so forming channels *f* through which vapours or gases passing through the roof *g* can escape to atmosphere without detaching the insulating panel or board from the roof. Panels or boards which are impermeable or resistant to gaseous diffusion, such as expanded polystyrene panels or boards which

are at present being used in the building industry, are particularly liable to be damaged, loosened or raised from the roof by rising gases.

- 5 The panel or board shown in Figure 2 comprises a layer *l* of expanded polystyrene which is separated from the roof *n* by a layer of cement *m* in the outer face of which a series of parallel channels extend
10 from one edge to the opposite edge. The panel or board is secured to the roof *n* by a layer *o* of adhesive. In such constructions, it is necessary to form or build up a system in which it is ensured that the several panels
15 or boards are ventilated.

- Figure 3 shows a series of juxtaposed insulating panels or boards (such as the panels or boards illustrated in Figure 2) each provided with a parallel series of channels *p*
20 and a main channel *q* which extends around each panel or board and into which the ends of the channels *p* extend. If the panels or boards are laid with the channels *p* in one panel or board not in line with the channels *p* of an adjacent panel or board, as
25 shown in Figure 3, the main channels *q* nevertheless ensure efficient ventilation since the channels *q* of contiguous panels or boards merge to form a continuous channel which
30 surrounds each of the panels or boards.

- Insulating panels or boards of the kind illustrated in Figures 1 to 3 can be secured to the roof surface by a cement wash or slop, hot bitumen, bitumen dispersions and bitumen solutions. Such adhesive means are preferably applied to the roof after which the insulating panel or board is laid in position. Such substances readily permit the panels or boards to be slid into position on the roof.
40 Insulating panels or boards of the kind illustrated in Figures 1 and 2 also permit the use of adhesives containing dissolving agents

or solvents. When applying the adhesive, the adhesive is to be so selected and/or so applied that the air spaces between particles or the channels for example, the spaces *f* in Figure 1 are not blocked up.

WHAT WE CLAIM IS:—

1. Means for covering a vapour permeable surface including a layer of expanded polystyrene and a layer of particles secured to one face of the expanded polystyrene layer, the layer of particles being securable, for example by an adhesive, to the vapour permeable surface, and being such that water vapour can escape through the layer of particles to atmosphere.

2. Means for covering a vapour permeable surface including a layer of expanded polystyrene and a juxtaposed cementitious layer one face of which is adapted to contact the vapour impermeable surface, the said face being provided with a series of channels along which water vapour can escape to atmosphere.

3. Means according to claim 2, in which main channels are provided at intervals in the cementitious layer, into which main channels run the said series of channels.

4. Means according to any one of claims 1 to 3 including a facing layer

5. A panel or board including a layer of expanded polystyrene, substantially as hereinbefore described with reference to Figure 1 of the drawings accompanying the Provisional Specification.

6. A panel or board including a layer of expanded polystyrene, substantially as hereinbefore described with reference to Figure 2 of the drawings accompanying the Provisional Specification.

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